CLAIMS

1. A method for measuring the diameter of an elongated article approximately circular in cross section, in particular of a wire or of a cable, with the following method steps

   - illumination of the article with a fan-shaped beam of at least one monochromatic light source approximately point shaped in the measuring plane, wherein the main beam direction stands preferably perpendicular on the longitudinal axis of the article

   - receiving the light on a single or multiple lined light-sensitive sensor on the oppositely lying side of the article, wherein the axis of the sensor stands preferably perpendicular on the main beam direction

   - measuring the distance of the article to the sensor or the light source

   - determining a value corresponding to the article diameter by evaluating the intensity courses in the diffraction margins at the edges of the shadow caused by the article, and of the measured diameter

   - the distance of the light source to the article or of the sensor to the article is selected such that the diffraction effect of oppositely lying edges of the article do not superimpose one another or only insignificantly superimpose one another in the plane of the sensor.

2. A method for measuring the diameter of an elongated article, in particular a wire or a cable of a small diameter, with the following method steps:

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- irradiating the article with light of at least one monochromatic light source point-shaped in the measuring plane, wherein the main beam direction stands preferably perpendicular on the longitudinal axis of the article

- receiving the light on a single or multiple lined light-sensitive sensor on the oppositely lying side of the article, wherein the axis of the sensor stands preferably perpendicular on the main beam direction

- determining a value corresponding to the article diameter by evaluating the intensity courses in the diffraction margins at the edges of the shadow caused by the article, wherein disturbances which can be lead back to dirt, in the intensity course of the diffraction margins, are by way of electronics recognised, corrected or suppressed.

3. A method according to claim 1 or 2, characterised in that from the intensity courses of the measured diffraction margins the position of the geometric shadow borders is determined.

4. A method according to claim 1, 2 or 3, characterised in that the measured intensity course in the diffraction margins and their position is compared to a set of stored sample courses.

5. A method according to claim 4, characterised in that a sample pattern is compressed or extended.

6. A method according to claim 1, 2 or 3, characterised in that the position of characteristic feature points is evaluated in the measured diffraction margins.

7. A method according to one of claims 1 to 6, characterised in that for reducing the distance of the light source and article an optical arrangement is provided.

8. A method according to one of the claims 1 to 6, characterised in that no optical elements deforming or deflecting the fan-shaped beam are provided between the light source and the article and/or the article and the sensor.

9. A method according to claim 1 or 8, characterised in that the distance of the article to the sensor is derived from the compression/extension degree of sample courses brought to coincide with the measured intensity course in the diffraction margin.

10. A method according to claim 1 to 8, characterised in that the distance of the article to the sensor is determined from characteristic feature points in the intensity course of the measured diffraction margins.

11. A method according to claim 1 to 8, characterised in that the distance is measured with the help of second or further measuring devices consisting of point light source and line sensor.

12. A method according to one of the claims 1 to 11, characterised in that the active zone of the light source parallel to the longitudinal axis of the article is linear.

13. A method according to one of the claims 1 to 12, characterised in that the extension of light-sensitive elements of the line sensor parallel to the longitudinal axis of the article is significantly greater than in the axial direction of the sensor.

14. A method according to one of the claims 1 to 13, characterised in that several point light sources are used.

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15. A method according to one of the claims 1 to 13, characterised in that disturbances on account of contaminations are recognised as well as corrected or suppressed by way of a comparison of the measured diffraction margins to sample courses.

16. A method according to claim 1 or 2, characterised in that disturbances on account of contaminations are recognised, corrected or suppressed by way of the compression/extension degrees present in the measured diffraction margins.

17. A method according to claim 1 or 2, characterised in that disturbances on account of contaminations are recognised, as well as corrected or suppressed by way of the distances between characteristic feature points within the measured diffraction margins.

18. A method according to claim 1 or 2, characterised in that the measured intensity course is filtered in a manner such that only those diffraction patterns which are caused in the valid measuring zone reach evaluation.

19. A method according to one of the claims 1 to 18, characterised in that with the help of a high voltage field in the measuring space, contaminations are removed.

20. A method according to one of the claims 1 to 18, characterised in that the measuring space is set under excess pressure.

21. A method according to one of the claims 1 to 18, characterised in that in the measuring space in an intervalled manner a pressure charge is introduced for removing contaminations.

22. A method according to one of the claims 1 to 21, characterised in that the wavelength of the light source is determined from the diffraction margin of the

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diffraction edge of the article to be measured or from a reference diffraction edge and the distance of the diffraction edge to the light source or to the receiving sensor.

23. A method according to one of the claims 1 to 22, characterised in that the linear sensor (16'e) is inclined to the main beam direction of the light source (12e).

24. A method according to claim 23, characterised in that two arrangements of light-source and sensor are arranged at a circumferential distance on the article in a manner such that both linear sensors lie in the perpendicular or are inclined to the horizontal.